Blue Lakes

No microplastics, just waves.

NO MICROPLASTICS, JUST WAVES.

SEPARATE CHAPTER PROJECT IMPACT EX ANTE REPORT

BENEFICIARIO COORDINATORE

LEGAMBIENTE

BENEFICIARI ASSOCIATI

Autorità di Bacino Distrettuale dell'Appennino Centrale

ARPA UMBRIA Agenzia Regionale per la Prevenzione Ambientale dell'Umbria

ENEA AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE, L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE

Global Nature Fund

Bodensee Stiftung Lake Constance Foundation

UNIVERSITÀ POLITECNICA DELLE MARCHE

PROGETTO COFINANZIATO DA

PlasticsEurope

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Introduction

This Report shows the results obtained by the survey done by ENEA, Legambiente and Arpa Umbria. The goal was to define the state of the art on microplastic monitoring (MP) activities carried out by the Regional and Provincial Agencies for Environmental Protection (ARPA/APPA) of the Italian Regions and Autonomous Provinces as part of action C.1 *Monitoring of project impact*.

The main objective of this survey was to determine whether or not regional ARPAs/APPAs disposed of methodologies for the collection and analysis of MPs in aquatic ecosystems. Particular attention was paid to the identification of any experience in the monitoring of MPs inland, in rivers and in lake waters.

The results of this preliminary survey were collected and evaluated as a separate chapter of the LIFE Blue Lakes Ex Ante Impact Report.

The survey will be repeated during the last quarter of the project to assess the extent to which the standardised protocols developed for the monitoring of MPs under Action B.2 of the LIFE Blue Lakes project. This will be applied by the Water Quality Monitoring Agencies, as a result of the training of ARPA/APPA personnel. The results of the second survey will be included and harmonised as a separate chapter of the Ex Post Report on the impact of the project

Survey

The survey began by sending a formal request to each Director of the 20 ARPAs/APPAs by ENEA, as scientific manager of Action B.2. It was requested to indicate a technical contact from which to find the necessary information for the investigation and with which to share the aims of the project and the future training activities planned for the technicians of the Agencies (Annex A).

Subsequently, technical contact people indicated for any ARPA/APPA received information materials about the LIFE Blue Lakes project together with an Excel file to be filled in with the necessary information related to the ordinary monitoring of MPs. In addition, any information related to any collaborations on ongoing experimental activities of each ARPA/APPA was requested.

Data collection

The 20 directors have appointed the technical referents for any ARPA/APPA. The list of selected referents is shown in Table 1, with the only exception of ARPA Friuli Venezia Giulia and ARPA Toscana, for which there are two contacts instead of one (one person responsible for sampling activity and the other for laboratory analysis).

Each contact person that compiled the Excel file provided the requested data relating to the monitored environment, the sites and the applied methodology, the output produced by the monitoring activity and any websites to be consulted, in accordance with the format listed in the annex (Annex. B).

Table 1: Selected ARPAs/APPAs technical referents

ARPA/APPA	Referente	E-mail
ABRUZZO	Giovannella VESPA	g.vespa@artaabruzzo.it
BASILICATA	Teresa TRABACE	teresa.trabace@arpab.it
CALABRIA	*in attesa*	
CAMPANIA	Lucio DE MAIO	ldemaio@arpacampania.it
EMILIA-ROMAGNA	Veronica MENNA	vmenna@arpae.it
FRIULI-VENEZIA GIULIA	Francesco CUMANI	francesco.cumani@arpa.fvg.it
	Cristina SGUBIN	cristina.sgubin@arpa.fvg.it
LAZIO	Laura AGUZZI	laura.aguzzi@arpalazio.gov.it
LIGURIA	Sonia ALBANESE	sonia.albanese@arpal.liguria.it
LOMBARDIA	Fabio BUZZI	f.buzzi@arpalombardia.it
MARCHE	*Stefania Sarcina*	stefania.sarcina@ambiente.marche.it
MOLISE	Antonietta CIOFFI	antonietta.cioffi@arpamolise.it
PIEMONTE	Francesca VIETTI	francesca.vietti@arpa.piemonte.it
PUGLIA	Nicola UNGARO	n.ungaro@arpa.puglia.it
SARDEGNA	Felicina TREBINI	ftrebini@arpa.sardegna.it
SICILIA	Giovanni VACANTE	gvacante@arpa.sicilia.it
TOSCANA	Michela RIA	m.ria@arpat.toscana.it
	Francesco LAVISTA	f.lavista@arpat.toscana.it
TRENTINO-ALTO ADIGE BOLZANO	Maddalena CASERA	maddalena.casera@provincia.bz.it
TRENTINO-ALTO ADIGE TRENTO	Giovanna PELLEGRINI	giovanna.pellegrini@provincia.tn.it
VALLE D'AOSTA	Alessandra ROMANI	al.romani@arpa.vda.it
VENETO	Giorgio FRANZINI	giorgio.franzini@arpa.veneto.it

The data collected so far highlights a specific activity MPs monitoring in the coastal strip carried out by the ARPAs of the 15 regions overlooking the sea. This is done according to the Marine Strategy Monitoring Program which, in compliance with the Framework Directive 2008/56/EC transposed in Italy with the legislative decree. N° 190/2010, coordinates a complex framework of measures and controls aimed at defining the state of sea quality. Among the many activities implemented by the Marine Strategy, a specific program is dedicated to microlitter and in particular to the MPs present in seawater that are monitored according to standardized procedures and protocols defined and identified in Module 2bis.

The methodology used is common to all ARPAs/APPAs, in the same way the selection of sites. For each area, pick-ups are made at 3 stations located at different distances from the coast (0.5; 1.5; 6 Mn), along orthogonal transepts of the coast line. The procedure provides, for each monitoring station, measurements and sampling at sea with manta net, identification and counting of MP fragments.

During the investigation, in addition to the compilation of the Excel file, a fruitful telephone exchange was added with some technical referents who reported several experimental activities of drawing and analyzing MPs also in fresh water in some of these 15 Regions. In particular, experimental activities carried out by:

ARPA Friuli Venezia Giulia: MPs survey on the Tagliamento river using the boat-drawn manta net;

ARPA Emilia Romagna: *Manta River project*, currently completed, coordinated by the Po River District Authority together with the project partners University of Rome "La Sapienza" and the Interregional Agency for the River Po. In February 2021, a monitoring activity of MPs in the Po river has started, carrying out periodic samplings in strategic points of the riverbed (i.e Isola Serafini, Boretto, Pontelagoscuro, Po di Goro delta).

In regions where experimental activities have not yet been implemented, a strong interest was detected in undertaking studies on the presence of MPs in the inner water bodies. For example, **ARPA Veneto** showed a strong interest in evaluating the possibility of implementing the monitoring of MPs in Lake Garda and the Adige river.

Some ARPAs/APPAs of regions that have no access to the sea have already started, or are interested in starting, MPs monitoring activities in freshwater bodies:

APPA Bolzano: monitoring activity of MPs in the Adige river by carrying out the sampling of riparian sediment according to the guidelines adopted for marine beaches and, in particular, the methods indicated by Georg Hanke (2013)[1] and those suggested by Löder and Gerdts (2015)[2]. Until now, a report has been produced describing the detection of both Small-MP (<1 mm) and Large-MP (1 - 5 mm; https://ambiente.provincia.bz.it/ambiente-salute/microplastics.asp). Moreover, in the coming months the sampling of river water will be implemented by means of a manta net together with an anchoring structure to bridges (material already purchased). The possibility to sample the lake water has also been envisaged.

ARPA Valle d'Aosta: analysis of water samples using the ATR technique (infrared spectroscopy). No information has been provided about the environmental matrix analysed and the sites in which such analysis were carried out.

ARPA Piemonte: preliminary acquisition of information, since the water monitoring activity has not yet begun. The interest of ARPA Piemonte is mainly addressed to the matrix of the inner surface waters and it is not ~~instead~~ interested in analysing urban wastewater. With the aim of increasing the knowledge on the available information on the presence/dispersion of MPs in

[1] "Guidance on Monitoring of Marine Litter in European Seas", (2013) EU Technical Subgroup on Marine Litter (TSG-ML);
[2] Methodology Used for the Detection and Identification of Microplastics—A Critical Appraisal (2015). Marine Anthropogenic Litter pp 201-227

surface waterways, ARPA Piemonte has identified the following operational phases (here below presented in a chronological order):

- development of shared sampling protocols and methods of analysis, through the creation of a network of direct contacts, involving the technicians of the different bodies that have developed projects on MPs issues;
- experimentation of sampling techniques for the surface running waters;
- implementation of microscopic observation techniques and morphological description of the MP components;
- definition of measurement units for the quantification (quantitative analysis) of MP concentrations;
- MPs classification based on the visible characteristics (shape and colour) of the plastics sampled (qualitative analysis);
- planning and implementation of the monitoring plan: identification of monitoring points and frequencies also based on the analysis of the pressures of water bodies
- experimentation of instrumental analytical techniques, also as a function of the development of sampling techniques;
- possible development of experimental methodologies in electron microscopy to complement the morphological description (optical microscopy).

ARPA Piemonte is available in establishing a network of contacts and it will provide an updated framework of what is happening in the Piedmont area. ARPA Piemonte also reports that, as part of the LIFE ESC VisPO project of which it is partnered together with Legambiente Piemonte and Valle d'Aosta, it will carry out the monitoring of river waters in the territory of around 40 SCIs located along the Po river. ARPA Piemonte communicates its availability in sharing the monitoring protocol and the results of the sampling carried out with the representatives of the LIFE Blue Lakes project. Finally, ARPA Piemonte reports that the CNR IRSA of Verbania intends to promote a project similar to LIFE Blue Lakes on the lake Orta area, within the activities for the Lake Contract and in collaboration with Legambiente club of Arona (Novara, Piedmont).

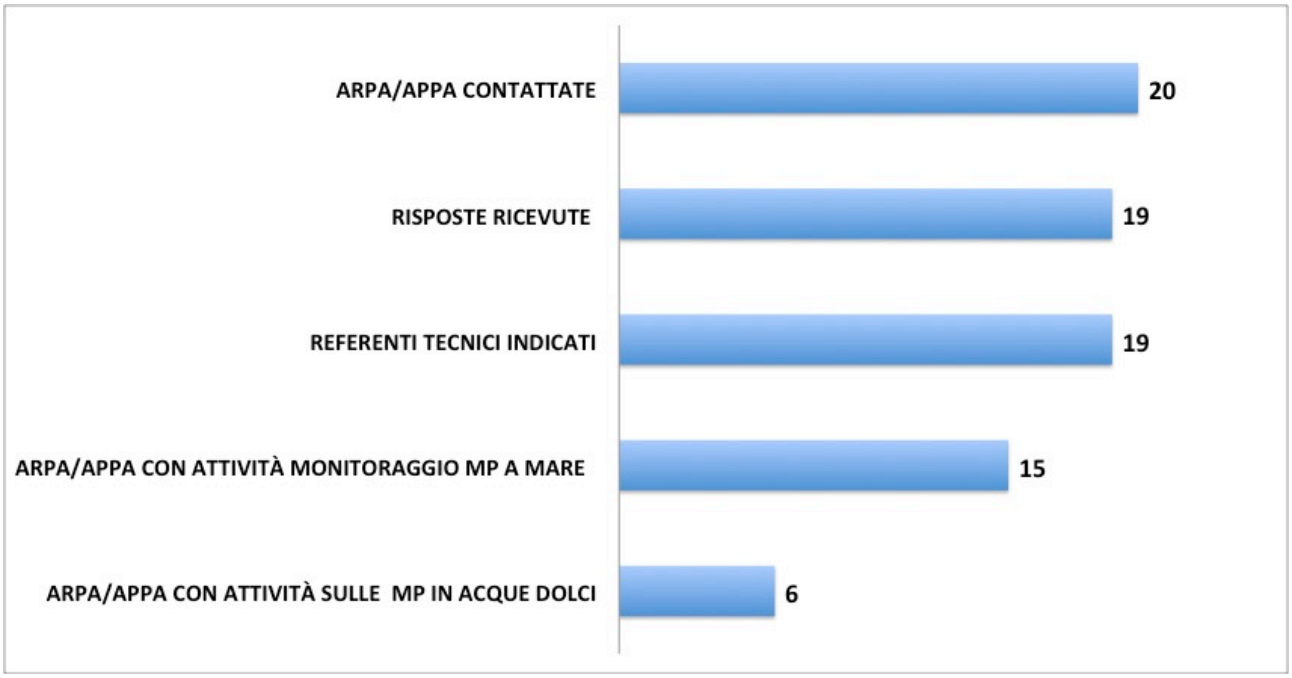

Figure 1: Summary of data on ARPA/APPA collected in the scope of the LIFE project Blue Lakes

Figure 1 summarize the data collected so far, providing a summary of available information obtained in this first phase of the project. This information will be useful for planning the training activities planned for the next year.

Conclusions

The survey has revealed some objective difficulties, related to the current emergency period, in recovering the specific contact person of each ARPAs/APPAs. Consequently, it was difficult to obtain all the information needed for drafting the ex-ante Report. These difficulties have prolonged the time of the two phases stated in the survey namely the identification of the technical contact person for the project by each ARPA/APPA Director (phase 1) and the selection of useful information by the contact person (phase 2).

ARPAs and APPAs promptly replied to our questions and they used different criteria in choosing the contact person. In some cases, the selected contact person was the same person in charge of the monitoring of MPs in sea waters, in other cases the contact person was specifically selected as a referent for the monitoring activity in the inner waters. These operational differences will be taken into account in planning the training courses, for which it will be necessary to diversify the envisaged activities.

In conclusion, the information collected so far, while showing a limited occurrence of MPs monitoring activities in fresh waters carried out by ARPAs/APPAs, has clearly shown a significant interest by all the national agencies in developing it during the LIFE project Blue Lakes duration. An evident willingness to cooperate in the project activities, as well as in attending the training courses, was also manifested by all the ARPAs/APPAs.

Annex A – Lettera di invito

AGENZIA NAZIONALE PER LE NUOVE TECNOLOGIE,
L'ENERGIA E LO SVILUPPO ECONOMICO SOSTENIBILE

Dipartimento Sostenibilità dei Sistemi produttivi e territoriali
Il Direttore

Roma, 16 ottobre 2020
Prot. ENEA/2020/53227/SSPT-PROTER

ARPA **XXX**
dirgen@cert.arpa. **xxx** it

Gentile Direttore,

Le scrivo in qualità di partner di **LIFE Blue Lakes (https://lifebluelakes.eu/)**, un progetto europeo coordinato da Legambiente che ha come obiettivo principale la prevenzione e la **riduzione dei rifiuti di plastica e microplastica nei laghi italiani** attraverso un programma articolato di attività di formazione, informazione e sensibilizzazione di specifici gruppi target, per invitarla come Agenzia a collaborare alle attività del progetto.

ENEA coordina e svolge in collaborazione con ARPA Umbria una delle principali attività del Progetto **LIFE Blue Lakes**, che prevede la stesura di un protocollo tecnico standardizzato per il monitoraggio delle microplastiche nei corpi idrici lacustri e che verrà proposto ai referenti tecnici delle Arpa e Appa italiane nel corso di uno specifico corso di formazione previsto nella primavera 2022, e costituirà un utile strumento per la pianificazione e la realizzazione di programmi di monitoraggio dei rifiuti plastici nelle acque interne a scala locale.

Per la stesura di tale protocollo, avremmo bisogno di acquisire informazioni in merito allo stato attuale delle metodologie e dei programmi di monitoraggio dei rifiuti plastici nelle acque interne e marine che vengono attualmente utilizzate dalle singole Agenzie Regionali e Provinciali di Protezione Ambientale. Questo quadro informativo di partenza ci consentirà di conoscere nel maggior dettaglio lo stato delle metodologie di monitoraggio in essere e capire come convogliarle in un unico programma di monitoraggio standardizzato a livello nazionale.

A tale proposito, Le vorremmo chiedere se potesse indicarci un referente tecnico all'interno della Sua Agenzia che sia in grado di fornirci le informazioni richieste e che possa partecipare alle future attività di formazione che verranno realizzate nell'ambito di **LIFE Blue Lakes**.

Dipartimento Sostenibilità dei sistemi produttivi e territoriali

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Tale referente verrà da noi contattato nei prossimi giorni e in tale occasione sarà per noi possibile fornire maggiori informazioni sul progetto di **LIFE Blue Lakes** e sulle attività specifiche destinate alle Agenzie regionali e provinciali.

In attesa di una sua risposta, Le invio i miei cordiali saluti.

ENEA
Dipartimento Sostenibilità dei Sistemi Produttivi e Territoriali
Il Direttore
Dr. Roberto Morabito

Annex B – File Questionario

ARPA/APPA	Nome Referente/i	Monitroraggio microplastiche	AMBIENTE MONITORATO	TIPOLOGIA ACQUE INTERNE	NOME SITO MONITORATO	MODALITA' DI MONITORAGGIO	OUTPUT/REPORT PRODOTTI	SITO WEB CONSULTABILE	NOTE